

HOYA NEW



Hoya pottsii Traill 1830

Oh There it is !
A pdf publication devoted to the Genus
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Editor: Dale Kloppenburg

Contents

When a species is collected from the wild, I feel it is wise to identify it, propagate it and name it. In this way it will eventually get it into commercial channels, be distributed to all those interested in this genus and thus be preserved. If in the future the species is lost through natural causes or forest destruction it will still be here on earth in your collection.

The following new species are presented in PDF format with ISSN number.
Check posting on my website “<http://.hoyardk.wix.com/Kloppenburg>” under publications.

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Hoya artwhistlerii Kloppenburg 2017

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Hoya artwhistlerii Kloppenburg sp. nova, holotypus W 3252 (HAW) hic designatus. Pollinia 19 mm longus et 0.08 mm latis, extremum brevior, cum pollinia interior extrema RT (rotundatus/contractus), differt.

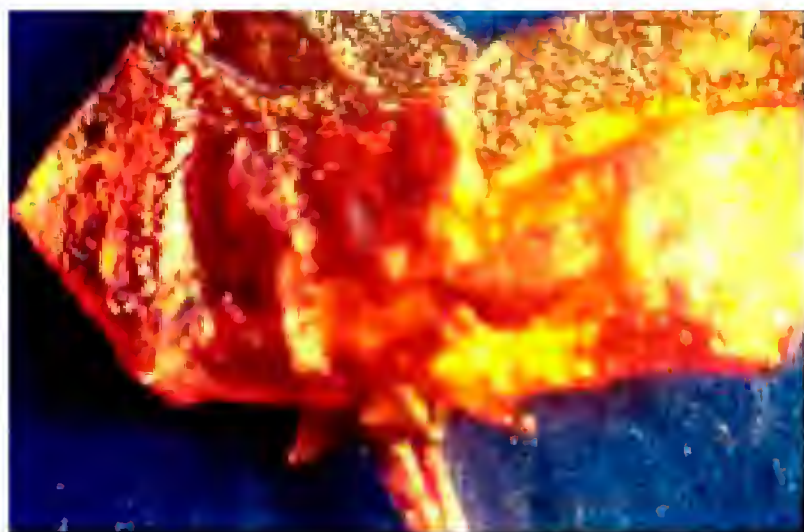
There are several floral structures here that make this species unique. There are only two other species with pollinia this small and so far they are both from the Philippines: *Hoya minuta* and *Hoya parvapollinia*. It differs from any other Samoan Hoya species.

Description of the following Herbarium sheet by Dr. Art Whistler:

W 3252 *Hoya betchei* (Schltr.) Schltr. 2 Jan 1976 Upolu, Samoa. Vine with white flowers and milky juice, growing over vegetation on the ridge to the south of Mt. Foa; elevation 400 m. 1 long stem ca. 16 pairs of leaves 4 peduncles 1 with 3 flowers + 4 pedicels. Envelope with 10 flowers. Leaves elliptic attenuate, glabrous, 3 - 5 cm. long x 1 - 2 cm widest near the middle, thin textured, nerves obscure but pinnate, netted seen most easily on the bottom; midrib narrow on bottom. Petiole 0.5 - 0.7 cm. long, same color as the stem, thin, glabrous, grooved above. Internodes short 3 - 3.5 cm. long, stem thin, glabrous, 0.1 cm in diameter. Peduncles 1.2 - 1.5 cm long, terete, filiform a little darker than stem. Pedicel as peduncles, terete, filiform, glabrous, 2.5 cm. long. Calyx small, dark color, does not reach the sinuses. Corolla campanulate cut about 1/2 way, glabrous outside, puberulous inside.

Note: Not *Hoya betchei* as flowers are too small 1.6 vs. 2.4 cm. peduncles and pedicels also too short. Altitude is too low, and inner coronal lobes spatulate not beaked (dentate). Pollinia among the very smallest.

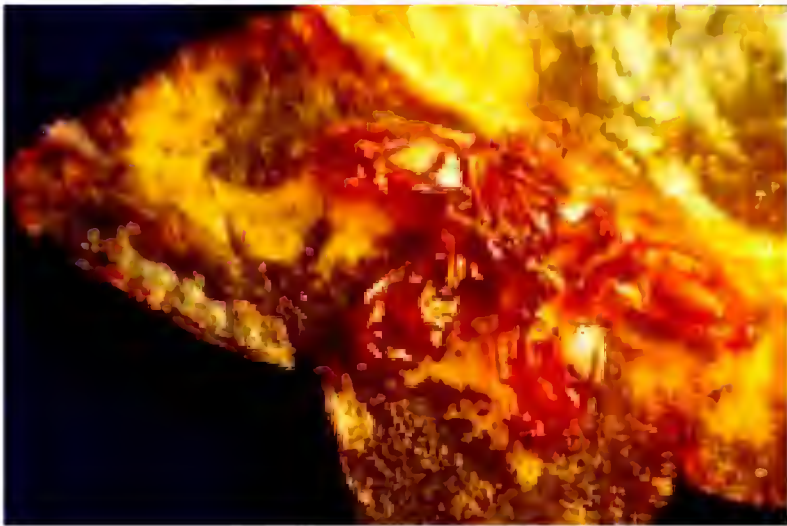
Microphotographs of the above sheet W 3252 follow:



Outside view of a pressed flower enlarged about 8x. Outside corolla surface is finely granulose and glabrous, inside is puberulous. Calyx is small and does not nearly reach the corolla sinuses.



Outside and inside view of the calyx with attached pedicel and on the Right the ovaries showing enlarged about 8x. The pedicel is dark colored 2.5 cm. long, terete, glabrous 0.06 cm. in diameter. The sepals are oval with rounder apices 0.16 cm. long and 0.10 cm at the widest. Calyx is glabrous inside and out. Ovaries are short domed 0.13 cm. tall and the base pair is 0.10 cm. wide, glabrous.



Inside view of the flower enlarged about 8x. The coronal lobes do not reach the corolla sinuses. One scale missing here. Corolla surface inside is puberulent; apex glabrous. Not deeply cut.

Sinus - sinus	0.48 cm
Sinus - center	0.38 cm
Sinus - apex	0.55 cm
Apex - center	0.80 cm
Widest	0.52 cm

Flower flattened is 1.60 cm. in diameter.



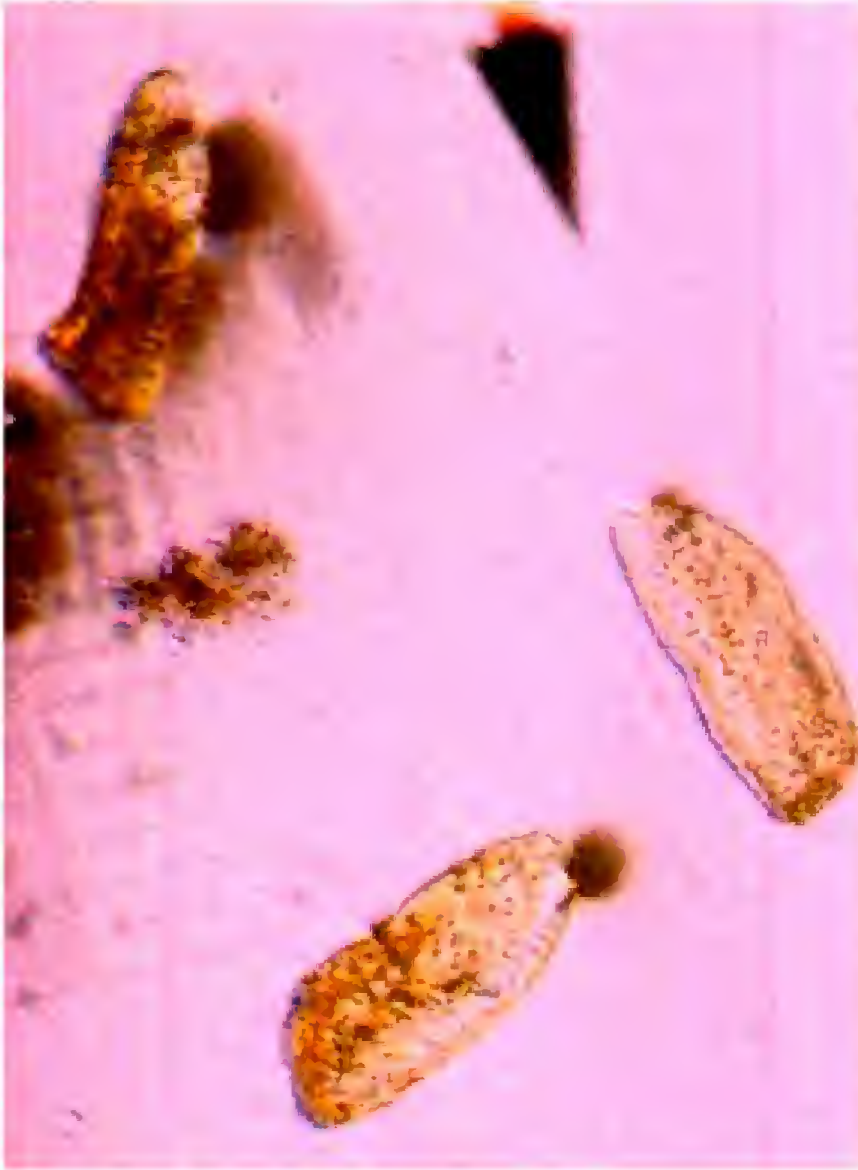
Bottom of the corona enlarged about 16x. The scales are channeled nearly to the central column, sides longitudinally sulcate. Anther wings are very narrow.

Apex - apex and center	0.25 cm
Widest	0.10 cm
Anther wing - aw.	0.13 cm

Dorsal concave with sharp edges, lower ledge extends to the outer apex. (emarginate).



Side view of the coronal scale enlarged about 16x. Inner lobe is raised and longer than the anthers but does not cover them. Dorsal is swayed and tapers up from the low point to the outer apex. Anther wings are narrow and not at all deeply scythe shaped. Scale is relatively thick.



All the pollinia I could find and no retinacula which I assume was very small.

The pollinia are also very small.

length	0.19 mm
widest	0.08 mm

There may be a retinacula under the upper left pollinium and the small dark spot on the lower center could be a retinacula or just a shadow. Only a very few hoyas have pollinium this small. 3 species as far as I can determine.

Pollinia inner ends: RT (one rounded one tapered)

A reduced copy of the type sheet below.



Hoya uafatoensis Kloppenburg 2017

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Hoya uafatoensis Kloppenburg sp. nova, holotypus #10339 (HAW) hic designatus. similes *Hoya diptera* Seemann 1861 sed coronae lobus interior spathulatus non dentatus et lobus dorsa cupulatus non rotundatus et lobus longitudino differt.

This new species is different from *Hoya diptera* Seemann as the inner lobe of corona are spatulate not dentate; the dorsal is cupped not rounded (convex); the lobes do not reach the corolla sinuses. The peduncles are here also longer 4.0 cm versus 3.5 cm and the sepals are smaller and ciliate. The stems are here round as opposed to square (which may not be true of *Hoya diptera*). There are other differences, see details following.

Photomicrographs of the flower from the above herbarium type sheet # 10339.



Side view of the pedicel. calyx and ovaries enlarged about 8x.

Pedicel very filiform, 2.3 cm long, terete, glabrous, occasionally a hair cell, lenticled, longitudinally shriveled, 0.04 cm in diameter.

Calyx small does not reach the corolla sinuses, ciliate, apex narrowly rounded, ligules present, 0.15 cm long and 0.11 cm at the widest, 0.20 cm from apex to center.

Ovaries narrowly dome shaped 0.14 cm tall, base pair 0.08 cm wide, glabrous.



Top view of the calyx enlarged about 16x. Described above; centrally thickened otherwise membranous, yellow ligules plainly visible at the sinuses.



Outside view of the corolla enlarged about 8x. Corolla surface glabrous, slightly conduplicate at the sinuses. Central collar much thickened opening 0.10 cm x 0.09 cm 0.03 cm tall darker color.

Sinus - sinus	0.35 cm
Sinus - center	0.25 cm
Sinus - apex	0.48 cm
Apex - center	0.84 cm
Widest	0.40 cm



Flower flattened is 1.68 cm in diameter. Inside view of the flower enlarged about 8x. Corolla is finely puberulent with centrally there are stiff hair cells pointing inward under the corona. Coronal lobes narrow, thick inner lobes raised and keeled but spatulate, anther wings protrude, dorsal concave, outer apex rounded surfaces are longitudinally sulcate.



Top view of the corona enlarged about 8x. Surfaces are glabrous. Center raised, otherwise horizontal.

Apex - apex	0.25 cm
Apex - center	0.28 cm
Widest	0.10 cm



Bottom view of the corona enlarged about 8x. Lower side of lobes are channeled all the way to the column.



Side view of a coronal scale enlarged about 16x. Inner lobe almost straight up, with central anther overtopping it. Scale rather thick, lower side lobes appear not to reach the outer apex. Anther wing thickened and a little curved.

Description of this herbarium sheet by the collector Dr. Art Whistler.

10339 *Hoya diptera* Seemann. Epiphytic vine with white flowers red base, uncommon in the ridge forest above the village of Uafato at 400 m. elevation. 3 April 1997. 1 stem branched 2 pairs of leaves 3 singles, 2 peduncles 1 with a long rachis, 1 pedicel 1 with short rachis 3 pedicels 1 flower. Envelope with leaf, 7 flowers, numerous pedicels. Leaves small ovate, glabrous, with long attenuate apex, base obtuse 4.5 - 6.3 cm long mostly 2-2.3 cm at the widest near the middle, nerves obscure pinnate, midrib below. Petioles glabrous, fine 0.8 - 1.0 cm long, grooved above. Internodes 5.5 - 7 cm long; stem

fine, terete, glabrous 0.2 cm in diameter, nodes a little enlarged. Peduncle 4.0 cm long terete, glabrous, 0.01 cm, in diameter, rachis tubular finely fascicled, glabrous. Pedicles 2.2 cm long, filiform, glabrous, terete; extremely fine.



Pollinarium enlarged about 165x.

Pollinium

length	0.51 mm
widest	0.20 mm

Retinaculum

length	0.12 mm
shoulders	0.11 mm
waist	0.05 mm
hip	0.08 mm
extensions	0.04 mm

Translators

length	0.09 mm
depth	0.01 + mm

Caudicle

bulb diameter 0.05 mm

Translator/caudicle type: ls/o

Retinacula type: HU

Caudicle type: G (surface granulate)

Pollinia inner end type: R

A reduced copy of the type sheet



Hoya corollamarginata Kloppenburg 2017

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Hoya corollamarginata Kloppenburg sp. nova, holotypus #5165 (HAW) hic designatus. Sp. non *H. betchei* (Schltr.) Whistler. Flora similes sed berior, 4-6 cm x 1.5 cm contrastre 6.9-9.5 x.8-2.3 cm et pedicillus brevior 2-2.5 cm contrastre 3.5 cm et corollae margo pubescens, differt.

This new species is much different then *Hoya diptera* since the foliage although of similar shape is smaller as are the pedicels and most other parts one unique feature here is the pubescent margined corolla and thus the name. There is only so far only one other Hoya species with pollinia 0.75 mm long and 0.22 mm wide and this is *Hoya carnosae* R. Brown. Here the corolla appears to be rotate not campanulate although it could be.

Photomicrographs and data from a flower from herbarium sheet 5165:



Center of the corolla outside enlarged about 8x. This surface is finely granulose and glabrous, central collar is red colored and a little thickened 0.12 cm x 0.08 cm at the opening. Slightly eared on lobes at the sinus area (conduplicate).



Outside surface at the corolla lobe, apex turned under.

Sinus - sinus	0.67 cm
Sinus - center	0.56 cm
Sinus - apex	0.86 cm
Apex - center	1.30 cm
Widest	0.70 cm

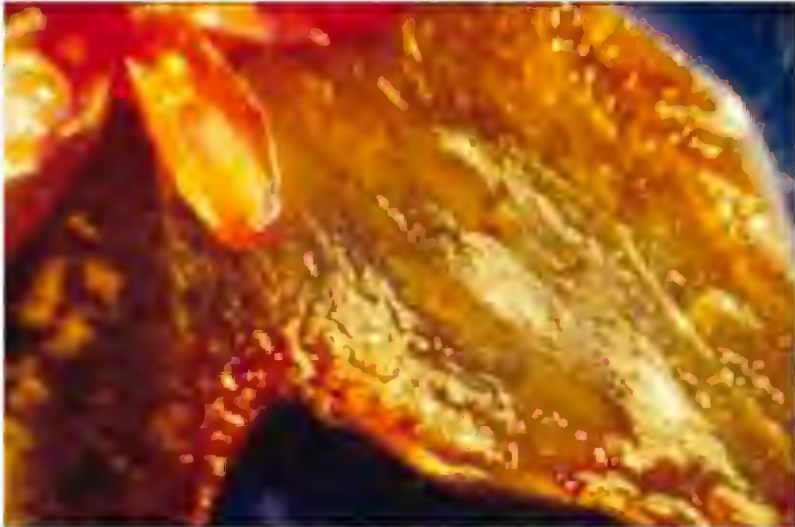
Flower flattened is 2.60 cm in diameter.



Outside surface of the corolla at the sinus, enlarged about 8x. Corolla lobe edges turn under (reflexed) at the sinus and are reddened, fine pubescence of the upper lobe is exposed.



Top view of the corona enlarged about 8x, it is relatively small. Inner and outer lobes raised. Inner lobe does not quite reach the center is spatulate. Dorsal is concave with rather sharp edges, outer apex narrowly rounded. Corolla margin is puberulous otherwise glabrous.



Top view of the corolla and corona at the sinus area. The puberulous margin on the coronal lobe is visible. Outer apex of corona does not reach the corolla sinus.

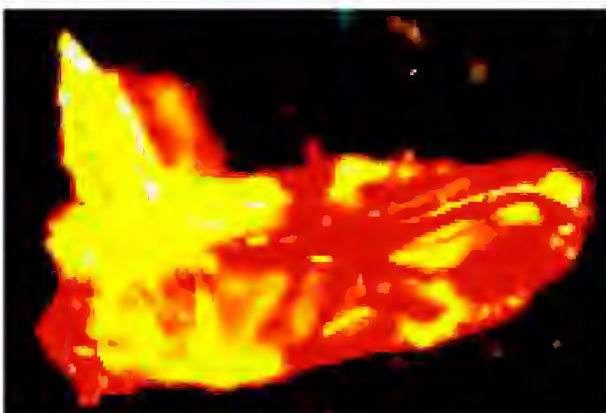
Apex - apex	0.25 cm
Apex - center	0.38 cm
Widest	0.17 cm



Top view of the separated corona enlarged about 8x. Center is dome shaped, note here the small umbo (yellow) just out from the inner lobe on the dorsal surface. Edges are narrow and sharp.



Corona bottom view enlarged about 8x. The lobes are channeled to the central column, anther wings are narrow and protrude, rounded apices.



Side view of a coronal lobe enlarged about 16x. Inner lobe is raised and exceeded by the anther, dorsal inside concave a little and sway backed. Anther wings are thin and not too curved. Lower side lobes extend to the outer rounded apex.



Pollinarium enlarged about 165x. The retinaculum is skewed up over the ends of the pollinia so the translators are not visible in their entirety.

Pollinium

length	0.75 mm
widest	0.22 mm

Retinaculum

length	0.30 mm
shoulder	0.19 mm
waist	0.08 mm
hip	0.15 mm

Caudicle

bulb diameter	0.06 mm
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Pollinia inner ends: T (truncate)

Retinaculum type: S

Translator/caudicle: ls/o

Description of the herbarium sheet W 5165 by Dr. Are Whistler:

H. betchei (Schltr.) Whistler. 22 Aug. 1982. Vine with yellowish-white flowers and milky sap, common in *Metrosideros* forest at the rim of Matavanu Crater; elevation 580 m. Savai'i, Samoa. 3 stems 2 intertwined, 5 leaves, 2 peduncles, one with pedicels & 2 flowers, 1 with a pedicel & juvenile pod. Envelope with 4 flowers. Leaves elliptic attenuate, apex acute, base narrowly rounded, glabrous, 4 - 6 cm long x 1.5 cm at the widest, nervation fairly distinct on the thin blades, 2 basal nerves extending less than 1/2 way up, otherwise pinnate netted, anastomosing, more visible above, midrib a little extended below, edges rolled narrowly under. Petiole ca. 0.7 cm long, fine groove above, dark basal gland. Internodes 8-10 cm long. glabrous, terete, fine 0.1 cm in diameter, nodes barely enlarged. Peduncle 2.7 cm long on cluster 3 cm long on pod, glabrous, terete, slightly smaller in diameter than the stem (one small developing peduncle 1.5 cm

long. Pedicels darker color, terete, glabrous, filiform 2 - 2.5 cm long. Calyx a little larger than others in group, sepals pointing apically. Corolla large, looks glabrous on both surfaces to the naked eye, deeply cut 3/4 the way in. Corona small & raised, lobes narrowly elliptic, outer apex raised, inner short, dorsal concave, lobes not reaching the corolla sinuses, glabrous.

A Reduced copy of the type sheet



Hoya fetuana subsp. tutuilensis Kloppenburg 2017

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Hoya fetuana subsp. tutuilensis Kloppenburg subsp. nova, holotypus W 3110 (HAW) hic designatus. Similis sp. sed corolla brevior et coronae lobus brevior 0.40 cm contrastre 0.43 cm, Pollinia usu similes, retinaculum leviter differt. Species non *Hoya betchei* (Schltr.) Whistler. Flora similes sed brevior, 5.5-8.5 cm x 2.3 - 2.4 cm contrastre 6.9-9.5 x 1.8-2.3 cm et pedicellus longior 2.8 cm contrastre 1cm et sepala ciliatus, differt.

This subspecies is similar to the species however the corolla is smaller also the coronal lobes are shorter, apex – apex 0.40 cm versus 0.43 cm, the pollinaria retinacula is similar except here the top has raised hands (HU) but not in the species. This species is unlike *Hoya betchei* with smaller leaves, longer pedicels and here with ciliate sepals among other differences (peduncles and pedicels are too short. The lobes of the corona are not shaped like *Hoya betchei* and the inner lobe is spatulate and dorsal is keeled, pollinarium way too large).

Photomicrographs of flower from herbarium sheet W 3110:



Pedicel attached to the corolla enlarged about 8x.

Pedicel 2.8 cm long, very fine, filiform, yellow 2nd bloom, terete, 0.06 cm in diameter.

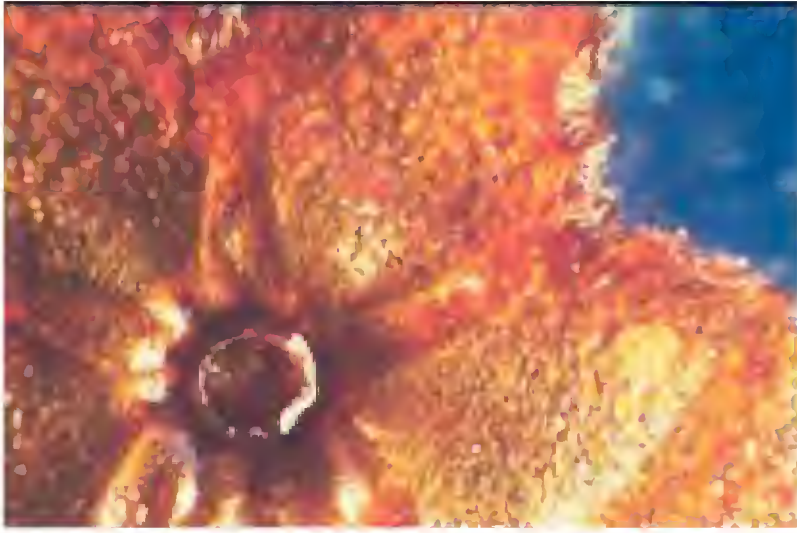
Calyx lobes do not reach the corolla sinuses.

Corolla surface glabrous.



Top view of the calyx enlarged about 8x. Sepals are ciliate, apex rounded, extending 1/3 or less to the corolla sinuses, both surfaces glabrous 0.18 cm long x 0.12 cm at the widest, apex - center 0.26 cm, membranous. I did not find any ligules.

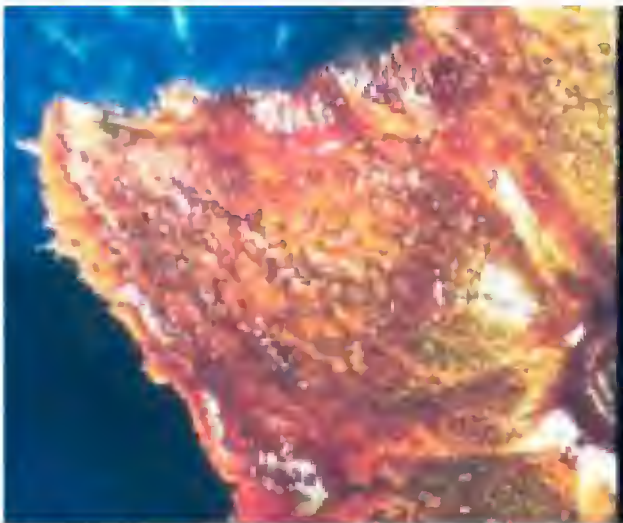
Ovaries short domed 0.13 cm tall and base pair 0.10 cm wide, glabrous.



Outside view of the corolla enlarged about 8x. Surface is finely granulose, glabrous, at the sinus area lobes are a little conduplicate eared. Central collar is thickened and indented a little, opening round.

Sinus - sinus	0.60 cm
Sinus - center	0.60 cm
Sinus – apex	0.75cm
Apex – center	1.10 cm
Widest	0.65 cm

Flower flattened is 1.20 cm in diameter.



Outside corolla surface at the lobe area enlarged about 8x. Apex is acute, tube cut about 1/2 way. Center sunken around the collar which is much thickened and deep red-black. Coronal lobes show through from the other side as narrow linear projections from the central area.



Inside view of the flower enlarged about 8x. Corolla inside is pubescent diminishing to puberulent under the coronal area. Coronal lobes are narrow, inner lobe is spatulate, raised to a domed center, dorsal is concave with a rounded longitudinal ridge down the center, edges sharp. Outer apex narrowly rounded emarginate, because of the lower side lobes, does not reach the corolla sinus.



Bottom view of the corona enlarged about 8x. Lobes are centrally channeled all the way to the central short column. Lower side lobes that form the sides of the groove are diagonally sulcate, narrow toward outer apex to leave a whole in the groove inside from outer apex.

Apex - apex	0.43 cm
Widest	0.16 cm



Side view of a coronal scale enlarged about 16x. Anther wings are deeply scythe shaped and the edges thickened; lower shelf begins at the anther wings and extends 3/4 the way out then up and to the apex.



Top view of the corona with one scale removed to expose the central styler crown that is a mealy headed small dome. Here the inner spatulate ends can be seen and the thick walls of the anther wings, that have opened. The dorsal central ridge is also visible

Anther wing - aw.	0.15 cm
Anther wing - center	0.15 cm
Retinaculum - ret.	0.09 cm



Pollinarium enlarged about 165x. Object distorted with one pollinium missing.

Pollinium

length	0.65 mm
Widest	0.23 mm

Retinaculum

length	0.21 mm
shoulder	0.18 mm
waist	0.08 mm
hip	0.12 mm
extensions	0.07 mm

Translator

length	0.14 mm
depth	0.03 mm

Caudicle

bulb diameter	0.05 mm
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Retinacula type: HU

Translator/caudicle type: ls/o

Pollinia inner end: R

Description of herbarium sheet below W 3110 by Dr. Art Whistler:

Hoya betchei Schltr. var. *tutuilensis*. 13 Aug. 1975, Tutuila, Samoa. Vine with milky sap and maroon flowers, climbing in trees on the ridge between Aua & Afone; elevation 250 m. 2 stems twining together, 10 leaves outspread pointing apically and one large globose cluster of flowers. 20 flowers, 24 pedicels. Envelop with 1 flower and one leaf. Leaves glabrous, thin, slate green, elliptic attenuate, apex acute to subacute, base narrowly rounded, 5.5 - 8.5 cm long, mostly 8.5 cm x 2.3 - 2.4 wide near the middle, nervation most prominent below, midrib extended below, pinnate with a pair of basal nerves anastomosing netted. Petiole fine 0.5 - 0.7 cm long, grooved above, glabrous, 1/2 the diameter of the stem. Internodes glabrous, 4 - 7 cm long, ca. 0.1 cm in diameter, nodes barely enlarged, Peduncle glabrous, terete, a little darker color than the stem, 3 cm long, 1/2 the diameter of the stem, 2nd blooming, rachis 0.2 cm long. Pedicels 2.9 cm long, terete, glabrous, filiform, dark like the peduncle. Calyx small. Corolla campanulate, cut about 1/2 way, outside glabrous, inside pubescent, heaviest around the margins. Corona glabrous, long elliptic, outer apex almost to the sinus and rounded, inner apex raised, dorsal concave.

Reduced copy of the type sheet



Hoya samoaalbiflora Kloppenburg 2017

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Hoya samoaalbiflora Kloppenburg sp. nova, holotypus W 3961 (HAW) hic designatus. Non *Hoya betchei* (Schltr.) Whistler 1978 retinacula ad grandiore et pedunculi etpedicilli ad breviora. Corollae lobus spatrulatis, differt.

Not Hoya filiformis flowers to large 1.4 vs. less then 0.9 cm diam. Altitude not low. Not betchei, flowers too small, retinaculum too large, peduncles and pedicels too short, inner coronal lobes spatulate not dentate, leaves too short, corolla cut more then half way. This is the only hoya I have recorded with a pollinia 44 mm long and 21 mm at the widest.

Micro photographs of the flower parts of the above herbarium sheet W 3961:



Side view of the pedicel, calyx and ovaries enlarged about 8x. Pedicel is 1.7 cm long, red-brown, terete, glabrous, 0.06 cm in diameter. The calyx is extremely small, glabrous, dark colored, cupped up when removed form the flower. Sepals with only a few cilia, 0.12 cm long and 0.12 cm at the widest near the base. apex is narrowly rounded. Ovaries are short dome shaped 0.10 cm tall and base pair 0.09 cm wide, glabrous.



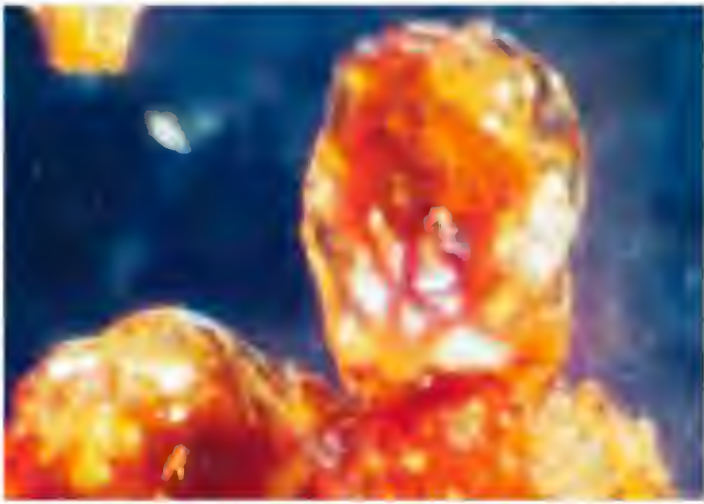
Outside surface of the corolla enlarged about 8x. Surface is glabrous. and deeply cut. Lobe apexes are acute, central collar is small thickened and slightly protruding a darker color, 0.01 cm round, 0.03 cm high.

Sinus - sinus	0.35 cm
Sinus - center	0.25 cm
Sinus - apex	0.50 cm
Apex - center	0.70 cm
Widest	0.40 cm

Flower flattened is 1.40 cm in diameter.



Inside view of the flower enlarged about 8x. Corona is glabrous, red and small, lobes do not reach the corolla sinuses. Lobes are slightly conduplicate at the sinus area. Inner and outer lobes are raised swayed near the inner lobes, dorsal seems domed, outer apexes are obtuse. Inner lobe is long and spatulate.



Top view of a coronal lobe enlarged about 16x.

Apex - apex	0.20 cm
Apex - center	0.21 cm
Widest	0.12 cm
Anther wing - aw.	0.12 cm



Corona bottom view enlarged about 8x. The lobes are channeled just to the sinus area; sides are diagonally sulcate. Column is thick and short even with the height of the lobe edges.



Side view of a coronal scale enlarged about 16x. Inner lobe is raised and extended, spatulate, anther is missing, swayed just out from inner lobe with outer lobe obtuse, lower shelves short and do not reach outer apex.



Pollinarium parts enlarged about 165x, again I had difficult to recover the structure for the anthers were unusually attached under the stylar table and retinacula buried beneath and also very narrow so I could not get it to lay flat. Translator can be seen at the bottom end of the pollinia and the clear caudicle over the lower left side of the retinacula which is laying on its side.

Pollinia

length	0.44 mm
widest	0.21 mm

Retinaculum

overall length	0.21 mm
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Translator

length	0.09 mm
depth	0.02 mm

Caudicle

bulb diameter	0.07 mm
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Description of this herbarium sheet by Dr. Art Whistler:

W 3961 29 Aug. 1978 Upolu, Samoa originally as *H. filiformis* Reich. then as *Hoya betchei* Schltr. Dec. 1990. Epiphytic vine with white flowers, growing on trees in the marsh just to the west of Mt. Fito, elevation 1050 m. 1 twice branched stem, 14 leaves 7 peduncles, 3 flowers, and 9 additional pedicels. Leaves narrow elliptic attenuate, apex narrowly rounded, 3.5 - 5.5 cm long, mostly 1.9 cm or narrower in width near the middle, base narrowly somewhat rounded; nerves obscure but pinnate netted some mold on surface on 2 leaves. Petiole grooved above, glabrous, mostly 1 cm long. Internodes glabrous, terete, 2-8 cm long, nodes only slightly enlarged. Peduncles ca. 1 cm long, terete, glabrous, rachis finely bracteate, round, very little larger than the peduncle, fascicled also. Pedicels terete, glabrous, filiform 1.3 cm long. Calyx small dark as are the pedicels. Flowers campanulate, glabrous outside.

A reduced copy of the type sheet



Hoya lanataiensis Kloppenburg 2017

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Hoya lanataiensis Kloppenburg sp. nova, holotypus W 1983 (HAW) hic designatus. This is not *Hoya betchei* (Schlechter) Whistler as the flowers are too small 1.7 cm vs. 2.4 cm, elevation not high, pedicels and peduncle too short, sepals ciliate, coronal inner lobe spatulate and reach the center, among other differences. There are no other Samoan Hoya species with a pollinia this length and width. Corolla margins here are not ciliate.

Micro photographs and measurements of the above sheet # W 1983:



Outside view of the flower enlarged about 8x. The pedicel is very fine, 2.3 cm long, terete, glabrous 0.04 cm in diameter. Calyx is small and the sepal apexes do not reach the corolla sinuses. Corolla outer surface is glabrous.



Calyx (and pedicel) side inside view enlarged about 8x. Sepals are ciliate, surfaces are glabrous. 0.10 cm long 0.02 cm to the center from the outer apex. There are small dark ligules present at the bases. Apex is fairly acute to slightly rounded. Ovaries are domed 0.10 cm tall and the base pair 0.08 cm wide.



Outside view of the corolla at the sinus area enlarged about 8x. Central collar is dark colored, protruding 0.02 cm, a little thickened opening 0.09 x 0.08 cm

Sinus - sinus	0.38 cm
Sinus - center	0.32 cm
Sinus - apex	0.68 cm
Apex - center	0.85 cm
Widest	0.50 cm

Flower flattened is 1.70 cm in diameter.



Flower inside view enlarged about 8x.
Corona is small, inner lobe is spatulate raised and reaches the center, lobes narrow, outer apex rounded, a long way from the corolla sinuses. Anther wings are doubled and protruding.



Top view of the corona showing the very prominent anther wings triplex apex. Note the narrow scales with rounder outer apex.

Apex - apex	0.33 cm
Apex - center	0.33 cm
Widest	0.10 cm
Anther win - aw.	0.14 cm
Retinaculum - ret.	0.07 cm



Corona bottom view enlarged about 8x. Scales are channeled, to the central column, and narrow, anther wings protruding here are doubled and thick walled.



Side view of a coronal scale enlarged about 16x. Inner lobe is raised dorsal relatively horizontal apex obtuse. Anther wings are thick and scythe shaped. The scale is not very deep.



Top view of the corona with the central stylar area exposed, enlarged about 16x. The edges of the pentagonal table here are rounded and striate on the upper surface, this hides the retinaculum and the pollinia were also difficult to extract because of this structure. The raised center here shows up as a yellow spot. I believe the retinacula are actually formed under the stylar table and the way the anther wings protrude under this structure would indicate this.

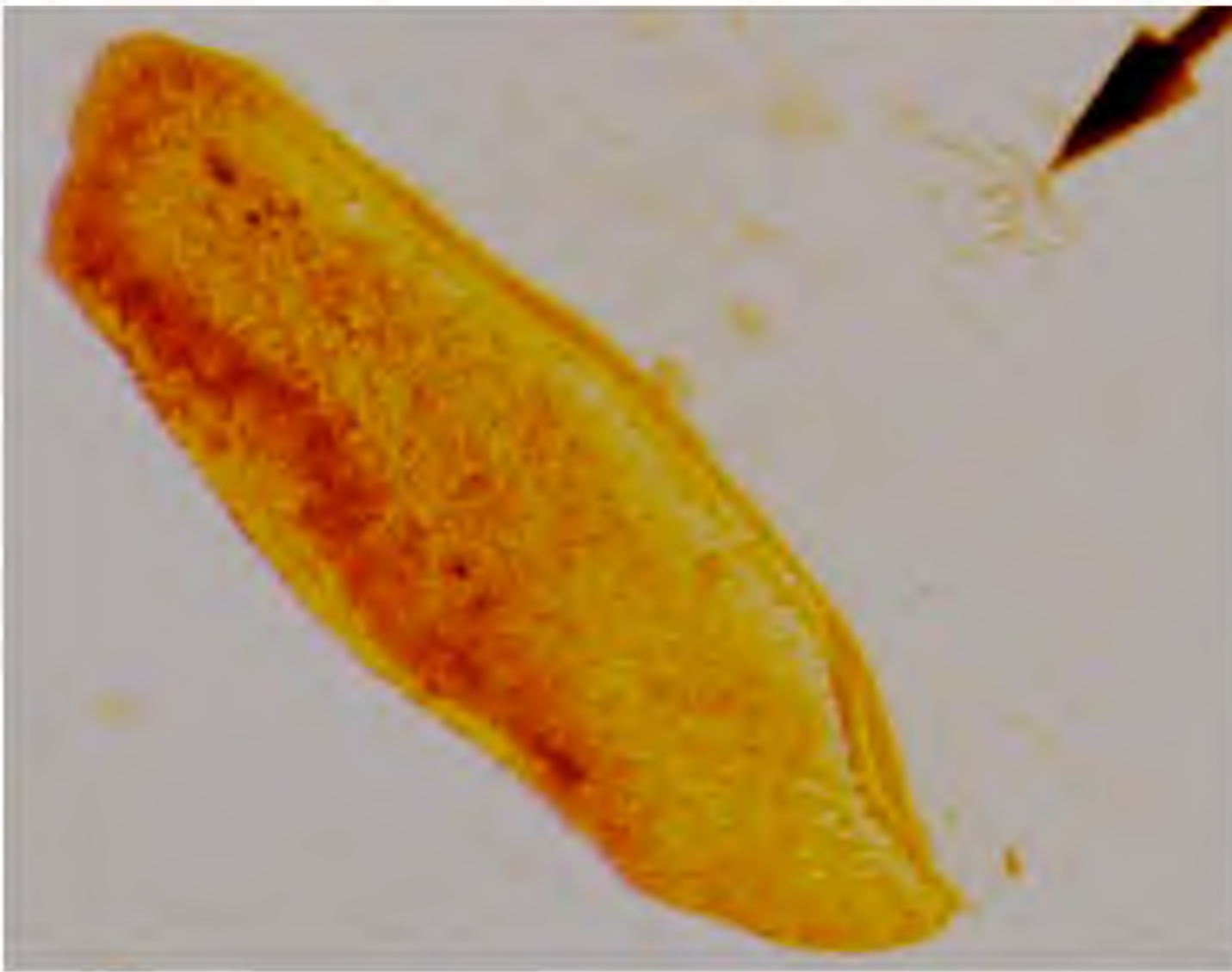


Retinaculum enlarged about 165x.

length	0.21 mm
shoulder	0.17 mm
waist	0.09 mm
hip	0.12 mm
extensions	0.05 mm

Type: S

Pollinia inner end: T



Above is a single pollinium enlarged about 165x. It is slightly distorted possibly along the lower left edge and the pellucid edge is folded over at the lower right side. Length is 0.75 mm and the widest here is 0.25 mm it might actually be slightly wider than that.

Description of the above herbarium sheet W 1983 by Dr. Art Whistler.

W 1983 *Hoya attenuata* Chris. (det, as *H. beitchei* Feb, 1975) 15 April 1974, Upolu, Samoa. Vine with milky sap and pale green flowers, growing in the forest near Lanatai west of Lalomanu; elevation 250 m. 2 stems 1 with 9 leaves & peduncle + 1 pedicel; 1 with 13 leaves, 3 peduncles 1 with 2 pedicels no flowers. Envelope with 12 flowers. Leaves narrowly elliptic attenuate, nervation obscure above occasionally visible on lower surface, pinnate netted, anastomosing, glabrous 4.5 - 5.5 cm long, 1 -1.3 cm widest near the middle, base narrowly rounded nearly cuneate, midrib visible below. Petiole 0.6 -0.8 cm long, terete, fine, grooved above, fine basal gland, glabrous. Internodes 3 - 5 cm long, stem not filiform, 0.1 + cm light brown, nodes just a little enlarged, terete, glabrous. Peduncle straight, terete, glabrous 2.7 - 3.5 cm long, rachis finely bracteate. Pedicels filiform 2.5 cm long (extremely fine). Calyx extremely small. Pod dark, glabrous, from an enlarged peduncle and calyx 10.5 cm long, narrow.

A reduced copy of the type sheet below.



Hoya patameansis Kloppenburg 2017

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Hoya patameansis Kloppenburg sp. nova, holotypus W 1796 hic designatus. This plant differs from *Hoya betchei* (Schlechter) Whistler in a number of ways, the leaves are smaller 5.5-9.2 cm x 1.7-2.8 cm versus 6.9-9.5 cm x 1.8-2.3 cm (actually within a range of variability), the sepals are not ovate-oblong obtuse but triangular-acute also densely ciliate, also smaller 0.15 cm versus 0.2 and the corolla lobes here are 0.75 cm long not 1.1 cm and not cut anywhere near half way. The coronal lobes here differ from are also different shaped especially the outer lobe apex in not as broad nor as obtuse and here the inner lobe is raised above the outer apex. We do not have pollinaria measurements for *Hoya betchei* but here the inner lobes are truncate not rounded as in Dr. Schlechter's drawing on the type sheet.

Photomicrographs and data from flowers on Herbarium sheet above, W 1796:



Pedicel, calyx and ovaries side view enlarged about 8x.

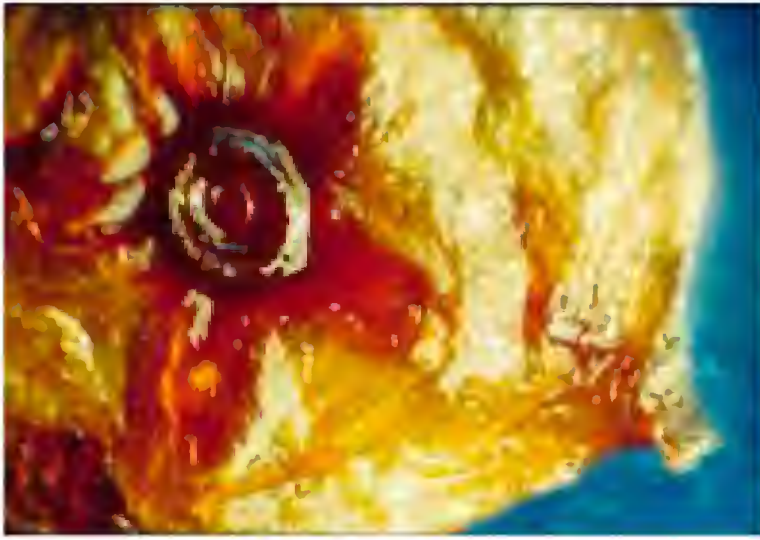
Pedicel is red-black, long curved slightly, 1st bloom, 4.0 cm long creased longitudinally (from drying) 0.05 cm in diameter.

Calyx dark. densely ciliate, overlapping at the base. 0.15 cm long and 0.14 cm at the widest, 0.23 from apex to the center.

Ovaries narrowly domed 0.12 cm tall and base pair 0.10 cm wide, glabrous.



Calyx top view enlarged about 16x, edged very ciliate centrally darker in color and sepals thickened centrally. Apex narrowly rounded. No ligules observed.



Outside surface of the corolla enlarged about 8x. Surface is glabrous, center collar thickened, oval reddish colored, 0.14 cm x 0.13 cm Sinus area slightly eared (conduplicate), corona showing through damp surface.



Outer surface at the corolla lobe area enlarged about 8x. Apex is acute.

Sinus - sinus	0.75 cm
Sinus - center	0.67 cm
Sinus - apex	0.75 cm
Apex - center	1.15 cm
Widest	0.80 cm

Flower flattened is 2.30 cm in diameter.



Inside surface of the flower enlarged about 8x. Corolla surface is pubescent marginally to the sinus area, glabrous internally. A few still hairs under the corona center radiating outward. Corona center is raised, inner lobes are spatulate and touch in the center, dorsal narrow and slightly concave with central ridge, 0.17 cm wide. Inner lobe with slight keeled top

Apex - apex	0.25 cm
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Bottom view of the corona enlarged about 8x. Lobes are channeled clear to the central column. Lower side lobes are rather flat and extend to the outer apex leaving it emarginate. Anther wings are narrow and extended, apex acuter. Column short.

Anther wing - aw.	0.20 cm
Aw. - center	0.18 cm
Retinaculum - ret.	0.11 cm



Coronal scale side view enlarged about 16x. Inner lobe raised, slightly keeled above, dorsal rather horizontal, lower side lobes from the anther wing area to the apex. Anther wings not too deeply curved.



Retinaculum enlarged about 165x. One translator attached to the left.

length	0.27 mm
shoulders	0.18 mm
waist	0.08 mm
hips	0.14 mm
extensions	0.05 mm

Translator

length	0.15 mm
depth	0.03 mm



Caudicle

bulb diam. 0.03 mm it is somewhat flattened.

Pollinarium enlarged about 160x. A foreign object lays to the left above the dark retinaculum.

length	0.73 mm
widest	0.24 mm

Translator/caudicle type: ls/o

Retinaculum Type: S

Pollinia inner end type: T

Description of the above herbarium sheet (W 1796).

Hoya chlorantha Reich. 13 March 1974, det. Feb. 1975 as *Hoya betchei* (Schltr.) Whistler. Savai'i, Samoa. Vine with milky juice and yellow-green hairy flowers, climbing in a tree along the Patamea River bed near Patamea. 1 stem 7 leaves. 1 pod. 1 stem 1 leaf and peduncle with pedicels. 3 glued on flowers Envelope with 9 flowers 3 pedicels. Leaves glabrous, elliptic attenuate 5.5 - 9.2 cm long x 1.7 - 2.8 cm widest, texture very thin, pinnate nerves, very netted. visible on both surfaces, midrib extended below, apex acute, base narrowly rounded to sub-cuneate. Petioles fine, glabrous, grooved above 0.8 - 1 cm long. Internodes 4 - 14 cm long, ca. 0.18 cm in diameter, terete, glabrous, nodes barely enlarged. Peduncle 8 cm long, terete, glabrous ca. size of the stem, 1st blooming. from fascicled rachis. Pedicels filiform, long, terete, glabrous, 4.4 cm long. Calyx ovate triangular. Corolla glabrous outside, campanulate. **Note:** not chlorantha, campanulate.

A reduced copy of the type sheet



Hoya corollamarginata subsp. magiagiensis Kloppenburg

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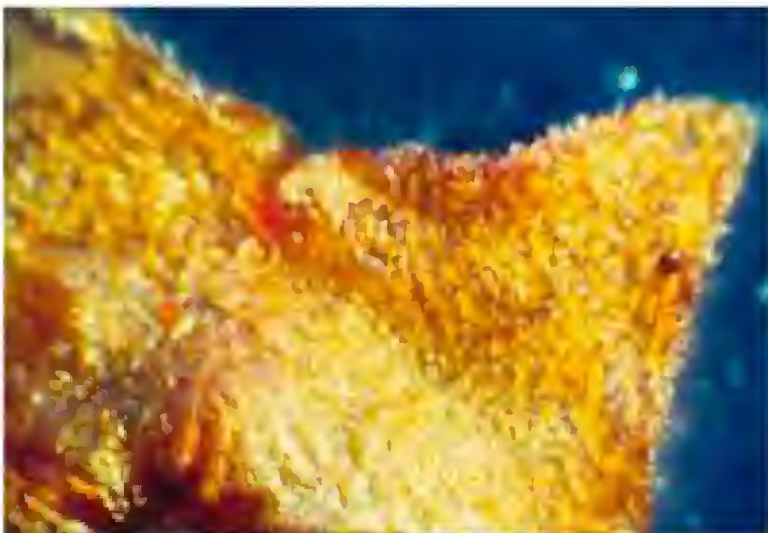
Hoya corollamarginata subsp. magiagiensis Kloppenburg subsp. nova, holotypus W 4443 (HAW) hic designatus, similes sp. sed coronae lobus brevior 0.25 cm longus contrastre 0.35 cm longus, et corolla diameter complanatus parviora 2.00 cm contrastre 2.60 cm et plus puberulus et pollinium breviora 0.60 mm contrastre 0.75 mm, differt.

The subspecies is similar to the species but the coronal lobes are shorter, and the corolla flattened is smaller in diameter and more puberulous; the pollinium is shorter 0.60 mm versus 0.75 among other differences.

Photomicrographs of a flower from the herbarium sheet W 4443:



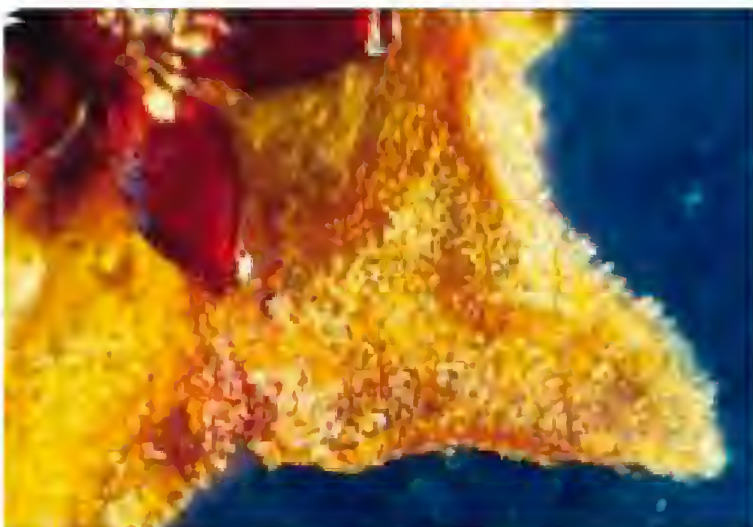
Outside central view of the corolla enlarged about 8x. Surface is finely granulose, glabrous, collar has thickened edges is nearly circular and only slightly raised. Coronal lobes showing through the damp surface. Collar opening 0.10 cm x 0.08 cm and 0.03 cm tall.



Outside surface at the lobe enlarged about 8x. Sinus area is slightly conduplicate, apex is acute. Corolla is cut more than 1/2 way.

Sinus - sinus	0.55 cm
Sinus - center	0.50 cm
Sinus - apex	0.70 cm
Apex - center	1.00 cm
Widest	0.65 cm

Flower flattened is 2.00 cm in diameter.



Inside surface of the flower enlarged about 8x, it is pubescent decreasing toward the center. Apex of the corolla lobes do not reach the sinus.



Top view of the corona enlarged about 8x. Center is raised with inner lobes spatulate. Outer lobes also a little raised with apex rounded, dorsal with median ridge a small umbo near the inner lobe, surface concave edges rounded a little.

Apex - apex	0.35 cm
Apex - center	0.40 cm
Widest	0.18 cm
Anther wing - aw.	0.20 cm
Aw. - center	0.20 cm
Retinaculum - ret.	0.09 cm
Ret. - center	0.07 cm



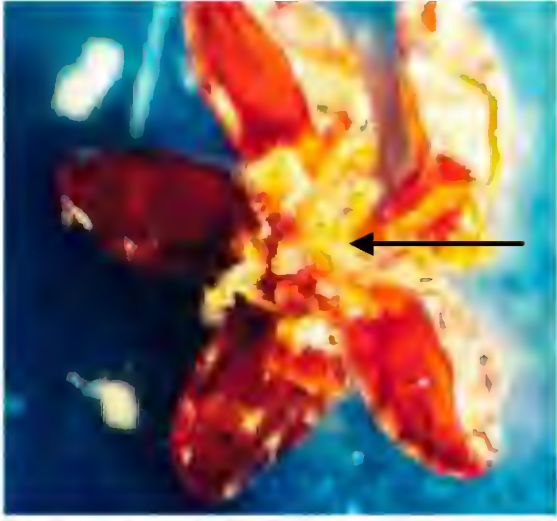
Bottom view of the corona enlarged about 8x. Lobes are centrally channeled to the central column and open a little near the outer apex. Anther wings are thin and protrude a little. Bulbous protrusions around the column.



Inside view of the corolla with the corona removed enlarged about 8x. Note the decrease in pubescent hair length toward the center, collar slightly thickened, raised a little from a central concavity also pigmented red.



Side view of the coronal scale enlarged about 16x. The scale is relatively short, sway backed with inner lobe sharply raised, anther overtopping. Anther wings are thin but deeply scythe shaped, bottom side lobes do not extend to the outer apex.



View of the stylar crown enlarged about 8x. Again as with most Samoan hoya species the center is raised a little, mealy and not much differentiated.



Pollinarium enlarged about 165x. I could not get the whole structure together.

Pollinium

length	0.60 mm
widest	0.25 mm

Retinaculum

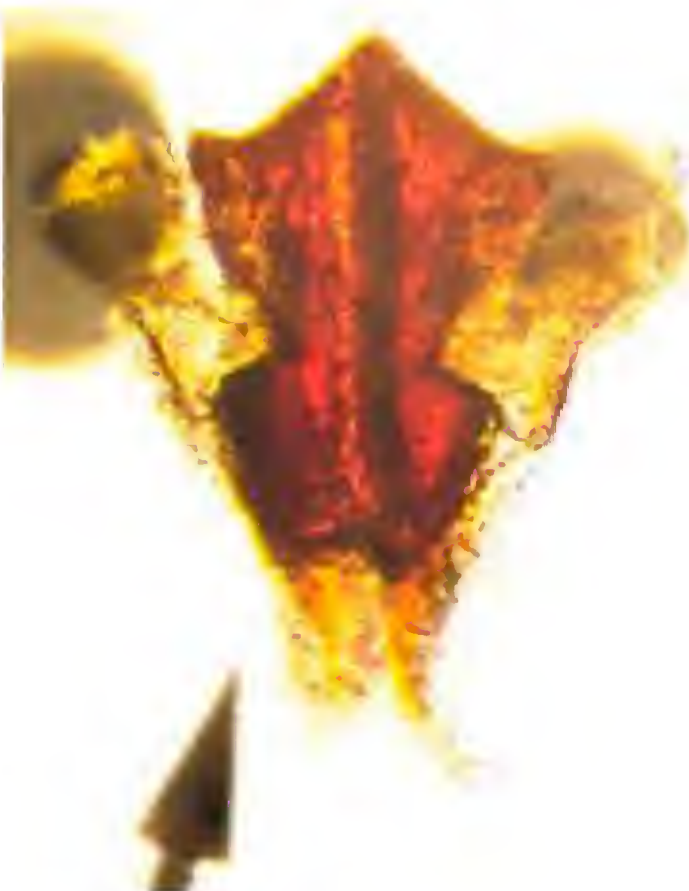
length	0.29 mm
shoulders	0.20 mm
waist	0.09 mm
hip	0.15 mm
extensions	0.07 mm

extensions are undifferentiated.

Translator/caudicle type: p/o

Retinaculum type: S nearly HU

Pollinia inner ends: T



Use the dark arrow as a reference for size. The head is 0.1 mm long, base 0.05 mm wide and stem is 0.02 mm wide. Species with retinacula this long are *H. imperialis*, *H. thompsonii*, & *H. cinnamomifolia*; they are in the upper range of sizes. The length is from the top of the head to the crotch where the extensions begin.

A reduced copy of the type sheet



Hoya corollamarginata subsp. upoluensis Kloppenburg 2017

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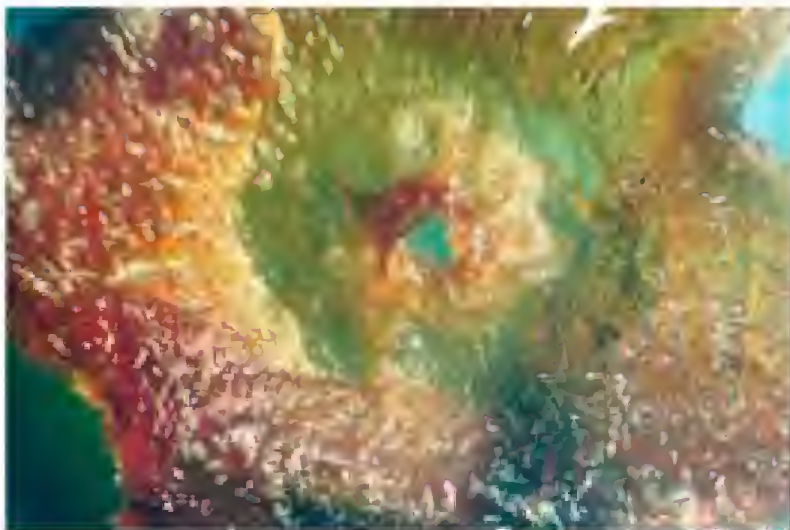
Hoya corollamarginata subsp. upoluensis Kloppenburg subsp. nova, holotypus W 3243 (HAW) hic designatus. Here it is similar to the species namely in the coronal lobes which are the same shape here a little longer, 0.35 cm versus 0.25 cm, The corolla here is a little smaller in most dimensions, flattened here it is 2.23 cm as opposed to 2.60 cm also the pollinium are similar but here the pollinia are 0.54 mm long compared to 0.75 mm long among other small differences. This is not Hoya betchei (Schlechter) Whistler as labeled.

Photomicrograph and data from herbarium sheet flower W 3243

Pedicel, rachis, and calyx data from the herbarium sheet via binocular scope, no loose envelope material so not photographed.

Peduncle: glabrous, 2.5 cm long x 0.04 cm in diameter, rachis is rounded and bracteate, with third blooming here. Bracts are concave inside ciliate, small ovate with short acute apices.

Calyx: glabrous, granulose outside and a few cilia on edges, very little basal overlap to the sepals, apex narrowly rounded. 0.13 cm long and 0.08 cm at the widest.



Corolla outside view at center enlarged about 8x. Outside granulose and glabrous. Central collar not too thickened center raised a little in a cupped area. Sinus area a little eared on the corolla lobe



Inside view of the corolla at the lobe enlarged about 8x. The inner surface is pubescent on the lobes inwardly shortening to puberulous.

Sinus - sinus	0.55 cm
Sinus - center	0.52 cm
Sinus - apex	0.65 cm
Apex - center	1.16 cm
Widest	0.60 cm

Flower flattened is 2.32 cm in diameter.

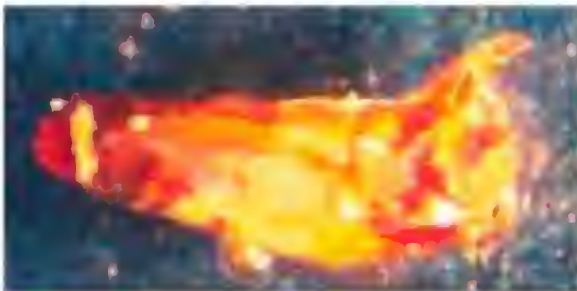


View of corona inside flower enlarged about 8x, lobes are longitudinally finely sulcate, inner lobe raised and spatulate, dorsal a little concave with an umbo near inner lobe and centrally longitudinal raised.

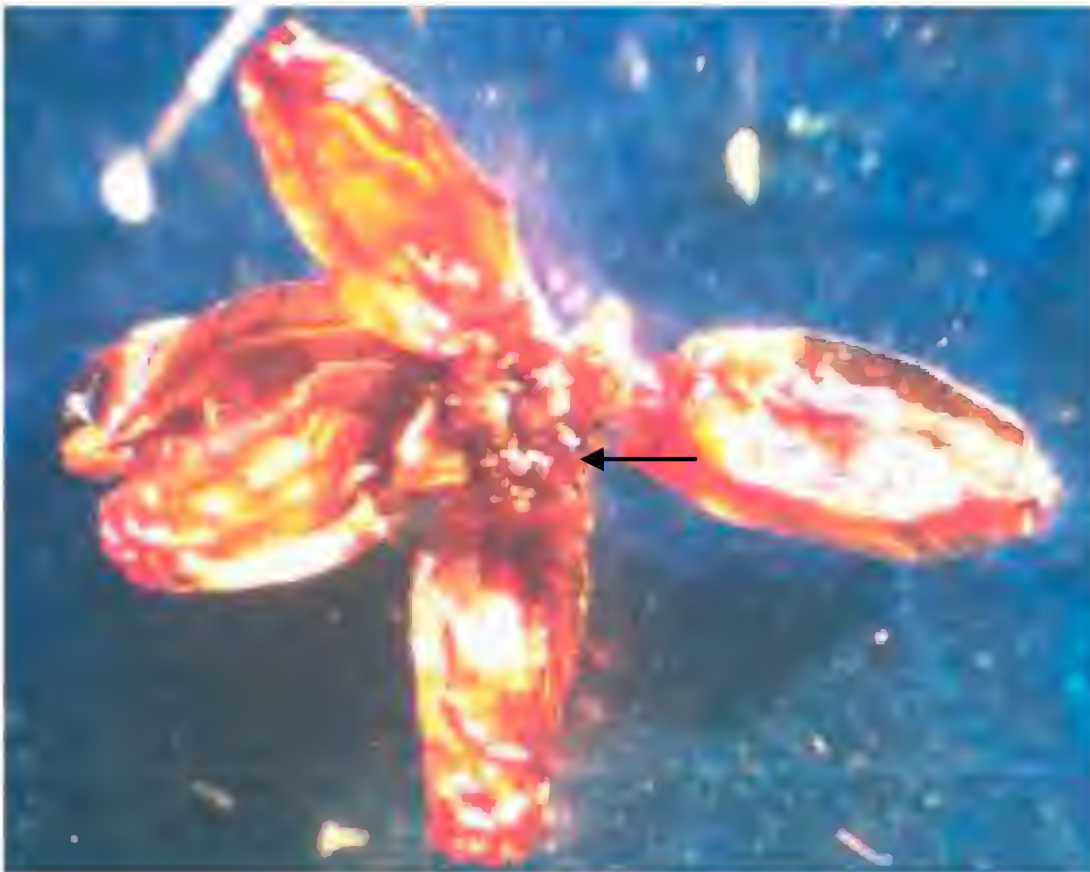
Apex - apex	0.35 cm
Apex - center	0.38 cm
Widest	0.15 cm



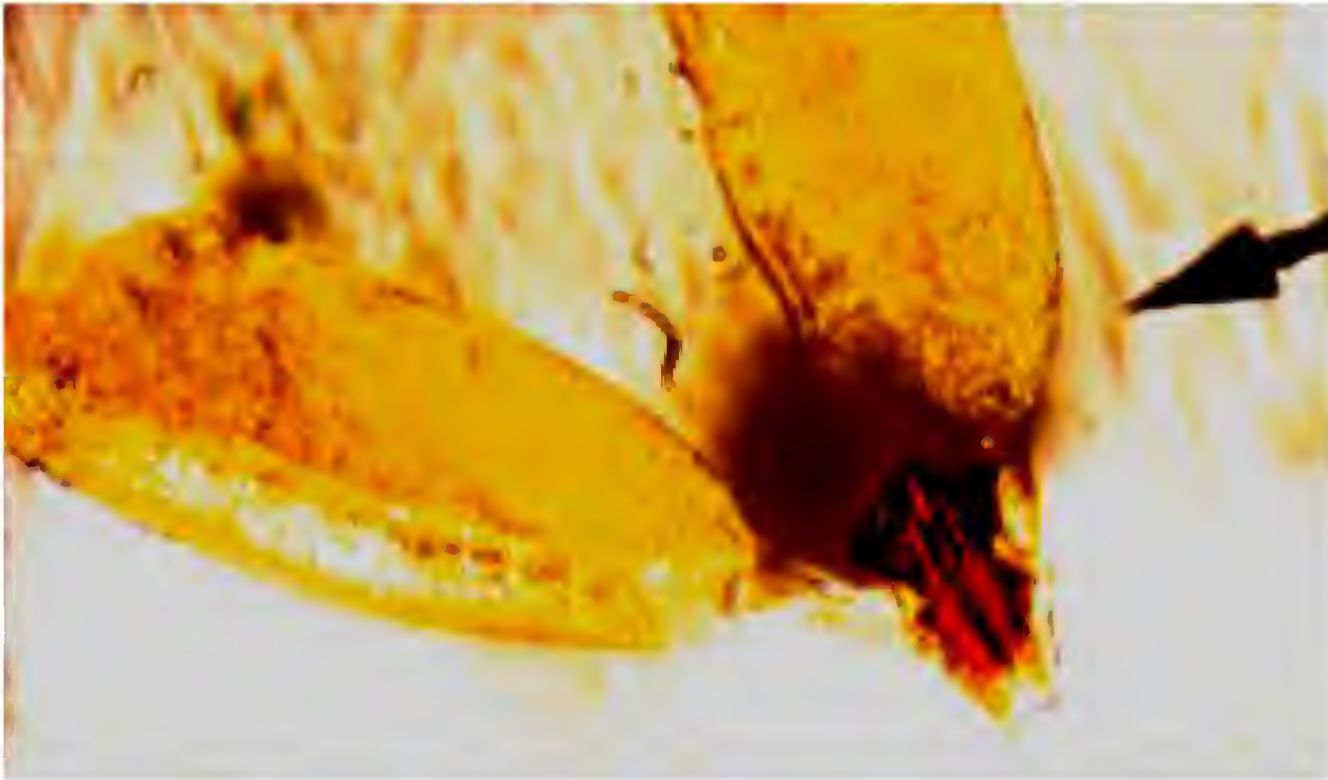
Bottom view of the corona with one scale removed enlarged about 8x, surface is channeled down the center, there is a short column, bottom shelves are narrow.



Side view of a coronal scale enlarged about 16x. Inner lobe a little raised, anther wings not deeply curved, dorsal surface nearly horizontal, outer apex rounded, blunt.



Top view of the corona with the stylar apex exposed in the center enlarged about 16x. The Samoan species all seem to have insignificant stylar apices, here shortly domed and a little mealy.



Pollinarium above enlarged about 148x. to show the retinaculum better then the photo below.



Pollinium

length	0.54 mm
widest	0.20 mm

Retinaculum

length	0.15 mm
shoulders	0.11 mm
waist	0.07 mm
hip	0.09 mm
extensions	0.04 mm

Caudicle

bulb diameter	0.05 mm
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Retinacula type: HU

Pollinia Inner ends: T

Translator/caudicle type: ls/o

Description of Herbarium sheet W 3243:

Hoya betchei (Schltr.) Whistler 2 Jan. 1976, Upolu, Samoa. Vine with milky juice and reddish flowers, growing over vegetation on ridge south of Mt. Fao; elevation 400 m. 1 stem with flower cluster, 1 stem with 8 leaves, envelope with 2 leaves and 8 flowers. Leaves narrowly elliptic attenuate, Salix-like, 5.5 - 6 cm long, mostly long, 1.4 cm at the widest near the middle. Petioles glabrous, very fine, darker color 0.5 cm long, grooved above. Internodes 9-12 cm long : 1 -2 cm long on new branches, 0.2 cm in diameter, terete, glabrous, nodes a little enlarged. Peduncle 1 cm long, terete, glabrous, small, rachis 0.5 cm long bracteate & base fascicled. Pedicels filiform, darker, terete, glabrous, 2.4 cm long. Calyx small. Corolla outside glabrous, cut more than half way, finely pubescent in the center lobes pubescent. Corona elliptic lobes, outer apex subacute, inner lobe raised acute, reaching the center, outer apex not reaching the corolla sinus; dorsal concave with an umbo near inner lobe.

A reduced copy of the type sheet



Hoya fetuana subsp. sigaeleensis Kloppenburg 2017

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Hoya fetuana subsp. sigaeleensis Kloppenburg subsp. nova, holotypus W344 (HAW) hic designatus. Not Hoya chlorantha since corolla here is campanulate also not Hoya betchei as here the peduncles are 3.5 cm long, versus “pedunculo tereti glabro, 5 - 6 cm longo” and the pedicels here are 2.8 cm long compared to 3.5 cm and the corona lobes are very different, shaped much longer and more narrow. Also the lobes of the corolla are here shorter, 0.75 cm versus 1.1 cm, among other differences. Here the flowers in a cluster are 17 according to Dr. Whistler, whereas Dr. Schlechter, in his type description of H. betchei says few flowers which is left to interpretation. This subspecies is more similar to the species than it is to H. betchei even though the flower color is different.

Photomicrographs of flowers from the above herbarium sheet W 344.

No Pedicel available:

No Calyx:



Corolla outside surface (lobe apex) enlarged about 8x. Apex acute turns under on drying. Sinus with small conduplicate edges, surface is granulate, glabrous.

Sinus - sinus	0.90 cm
Sinus - center	0.75 cm
Sinus - apex	0.98 cm
Apex - center	1.50 cm
Widest	1.03 cm

Flower flattened is 3 cm in diameter.



Outside surface of the corolla at the center enlarged about 8x. Corona shows through the Kew solution soaked flower. In the center there is a mushy white substance, possibly milky sap exudent. Collar is thickened, opening is 0.15 cm x 0.14 cm and 0.03 cm tall, dark colored.



Inside view of the corolla at the sinus enlarged about 8x. Conduplicate a little at the sinus, coronal lobes do not nearly reach the sinuses; are dark colored. Inner corolla surface is marginally pubescent decreasing in length toward the center where it is glabrous.



Top view of the corona enlarged about 8x. Center is raised, lobes are narrow, inner lobe spatulate, outer apex rounded and emarginate, dorsal is concave with sharp edges.

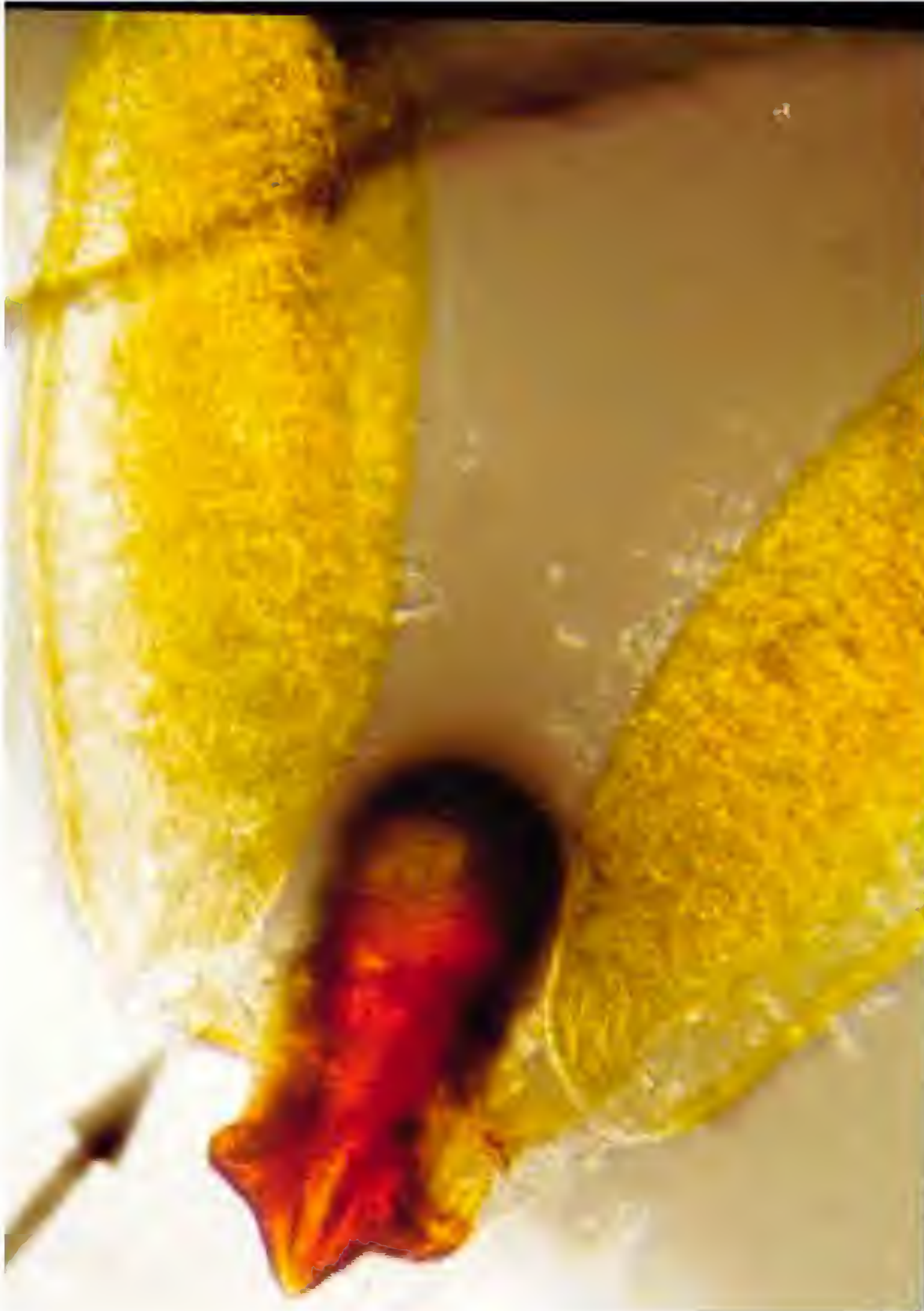
Apex - apex	0.48 cm
Widest	0.15 cm
Anther Wing - aw.	0.22 cm
Aw. - center	0.18 cm
Retinaculum - ret.	0.15 cm



Bottom view of the corona enlarged about 8x. Scaled are channeled all the way to the central column. Again there is a waxy substance (showing here as yellow, actually a milky white) in the center, side lobes are broad and flat. Anther wings are thick.



Side view of a scale enlarged about 16x. Actually the dorsal surface is nearly horizontal and the inner apex raised, although the inner lobes touch the anthers protrude above them. Anther wings are deeply scythe shaped; lower side lobes are shelf-like and extend to the outer apex.



Pollinarium enlarged about 165x. The retinaculum is turned on the axis of the translators and caudicle so the head here is pointed down.

Pollinia

length 0.74 mm
widest 0.23 mm

Retinaculum

length 0.37 mm
shoulder 0.26 mm
waist 0.10 mm
hip 0.14 mm
ext. 0.04 mm

Translator

length 0.18 mm
depth 0.03 mm

Caudicle bulb

diameter 0.10 mm

A better view of the retinaculum and the translator arms. This is a large retinaculum.





Single pollinium enlarged about 165x. The dark arrows are 0.10 mm long.

Translator/caudicle type: ls/o

Retinacula type: HU

Pollinia inner end type: R nearly truncate

Description of Herbarium sheet bellow W 344:

Hoya chlorantha Reich 19 July 1973, determined as *Hoya betchei* (Schltr.) Whistler, Feb. 1975. Upolu, Samoa. Vine with milky juice & cream colored flowers growing on a tree in a pasture northwest of Mt. Sigale. Elevation 500 m. 1 long curled stem 19 leaves 1 flower cluster (17 flowers). Leaves Salix-like narrowly elliptic attenuate, outspread, glabrous, edges roll under, midrib exposed below, texture thin, slate green, 6.5 - 8.5 cm long x 1.5 - 2 cm at the widest, nervation more prominent above than below, pinnately netted. Petioles thin narrow, 0.7 cm long, do not appear to be grooved above, glabrous. Internodes 5.5 - 11.5 cm long, terete, glabrous, ca. 0.11 cm in diameter, nodes very slightly enlarged. Peduncle 3.5 cm long, heavier than the petiole, terete, glabrous, first bloom. Pedicels long, filiform, terete, glabrous, 2.8 cm long. Calyx not too small, ovate, does not reach the corolla sinus. Corolla campanulate, large, cut 1/2 way, glabrous outside, inside marginately pubescent. center glabrous. Corona glabrous, narrowly elliptic raised and do not reach the corolla sinuses, with lower side lobes; outer apex emarginate, rounded; inner apex long, pointed.

A reduced copy of the type sheet

